

American Association of Petroleum Geologists

An International Geological Organization



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Division

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1988-1989

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NEWSLETTER

INTRODUCTION

Boo! Once again the Energy Minerals Division uses the element of surprise to capture your attention. Events planned for the coming year are quite exciting and offer something for everybody. In addition to telling you about these plans, this newsletter takes a retrospective look at the EMD programs for the Bismarck, ND and Charleston, WV section meetings. It reports on the progress being made on several publications, coal and remote sensing. And it presents some additional findings from our questionnaire sent out one year ago.

One thing these activities convinces me of is that the role of a professional geoscientific organization such as this does NOT depend on skyrocketing energy prices to achieve relevance. The need to pool our experience, to advance the scientific tools and knowledge at our disposal, and to demonstrate the applications of geological skills and thinking in a highly integrated and interdisciplinary corporate and political world are continuing and vital needs... no less so in a highly competitive energy market.

The various EMD programs described here are instructive, both for their technical content and for showing how specific individuals are *taking advantage* of their professional society. The message to you? EMD offers you ways to collaborate and accomplish things that are in your own interest. You don't need to be an altruist - all you need is a noble spirit!

Jeremy Platt

CENTER-STAGE IN SAN ANTONIO: "EFFECTIVE ENERGY MINERALS MANAGEMENT -- ISSUES FOR THE 1990'S"

E. Guerry Newton, formerly with the Dept. of Interior and EMD Eastern Section Councillor, and now president of E. G. Newton & Assoc., has organized a panel of experts to address this topic at the 1989 Annual Meeting in San Antonio on April 24. The session has been given a prime time slot, the first afternoon of the convention, and should touch on the interests of all of us. Guerry has explained that "management" means both the big "M" -- government's role (of which there are numerous levels and facets) -- and the small "m", comprising the many activities of minerals professionals in their companies and other positions. Now is a good time to take stock of the challenges that management issues, however defined, will likely place on the geoscientific community over the next 10 years.

Contrary to what you may have seen, the schedule of talks is as follows:

- 1:20 Convenors' Remarks
- 1:30 E. G. Newton: Introduction to Session
- 1:40 M. T. Halbouty: Energy Imperatives -- Energy Security -- Energy Issues and Management
- 2:00 H. Gluskoter: Coal Resources Management Issues

- 2:20 T.B.A.: Oil and Gas
 2:40 J. Stevenson: Nuclear Energy Issues of the 1990's
 3:00 break
 3:20 J. W. **Rold**: Issues Affecting Non-Conventional Energy Minerals Development
 3:40 B. Morgan: Energy Minerals Research Needs of the 1990's
 4:00 **C. J. Mankin**: Policy Considerations Affecting Energy Minerals Management in the 1990's
 4:20 W. L. Fisher: Summary Remarks

At the conclusion of Dr. Fisher's remarks, open discussion will be encouraged until adjournment at or before 5:00 pm.

The event promises to be both stimulating and educational. We all have an idea of what "minerals management" means in certain specific situations. Here we should obtain a much broader view, while at the same time identifying topics and activities that may demand greater personal involvement.

For more information, contact Guerry Newton at E. G. Newton & Assoc., Inc., P. O. Box 65335, Washington, D.C. 20035 (Ph: 703-827-9597). To register, you can just call AAPG in Tulsa.

OTHER EMD EVENTS IN SAN ANTONIO

With guidance and championing of EMD activities by the EMD Vice Chairman Mark Eidelbach and EMD Technical Program Chairman Tom Campbell, a busy program of EMD activities has been put together:

Monday AM, April 24: AAPG Opening Session

Monday PM: EMD Effective Energy Minerals Management -- Issues for the 1990's (described above).

Tuesday AM: EMD General Session (Nine papers on radwaste site characterization; coal quality, stratigraphy. and resources; coalbed methane; oil shale; and remote sensing, including a special introduction and overview to the afternoon poster session on remote sensing).

Tuesday Midday (11:30-2:30+): EMD Luncheon and Business Meeting

(The luncheon speaker is Arthur von Rosenberg, General Manager of San Antonio City Public Service. In a world where fuel market issues are paramount to the business of fuel supply organizations, Mr. von Rosenberg provides us an excellent opportunity to understand the perspective of an electric utility, addressing "Fuel and Electric Generation Planning". Moreover, if you will pardon your current president's enthusiasm for Mark Eidelbach's selection, J. Platt would like to add that he once asked Mr. von Rosenberg to speak at an EPRI meeting on the City's daring coal transportation arrangements. His comment: *"The man is one of San Antonio's outstanding Human Resources; a great and engaging speaker; not to be missed!"* There you have it.

The EMD Business Meeting will cover reports from the Executive Committee, Section Councillors and Committee Chairpersons, and other items. All members are welcome to attend.

Tuesday PM: EMD and Astrogeology Committee Poster Session on Remote Sensing (7 posters) (A special poster session on case studies and new methods for both oil and energy minerals applications; includes a discussion of underwater remote sensing using sidescan sonar. Based on a special call-for-papers prepared by Lee Allison, Fred Henderson and Doug Peters).

and

EMD Poster Session on Regional Coal Studies (3 posters)

Thursday AM and PM, April 27: Two EMD Field Trips

(Yes, two - count them, 2 - field trips in one day! Back to back. AM: Energy Programs at the Southwest Research Institute. Everything from testing suitability for nuclear waste storage to natural gas modeling to inclined drilling. PM: South Texas Lignite. Observe the geologic setting and operations of Atascosa Mining Co's San Miguel lignite mine. Counting the EMD trip last March to the Gibbons Creek and Jewett lignite mines, EMD members have had a chance to get quite an education on lignite mining in Texas. For those interested in reading up in advance on the geology of this and other Gulf lignite operations, consider *Gulf Coast Lignite Geology*, Finkelman, Casagrande and Benson, eds., available from Environmental and Coal Associates, P. O. Box 3168, Reston, VA 22090.

GEOTHERMAL HAS NOT BEEN FORGOTTEN!

On Wednesday, May 10, 1989, Chevron will host a special field trip to the HEBER GEOTHERMAL FIELD, Heber, California. The field trip is being arranged as part of the AAPG Pacific Section Annual Meeting in Palm Springs, May 10-13. John Spotts, our Pacific Section Councillor, kindly provided the following summary:

"The trip will focus on the development and production history of the Heber Geothermal Field and will examine the operational problems of supplying the 8 MM lb/hr mass flow of hot reservoir fluids required for the 52 MWe HGC dual flash electrical generating facility. Onsite tours of both the Chevron operated fluid production-fluid disposal systems and the HGC power generation facilities will be included. Discussions will include the local geologic controls for the Heber geothermal field, the hydro-geologic setting of Heber in terms of current geochemical studies, and an overview of geothermal development within the Salton Trough."

For more information, contact one of the trip leaders: Stuart Johnson, Chevron Resources Co., P. O. Box 5049, San Ramon, CA 94583-0949, (415) 842-5321 or Steve McDonald, Chevron Geothermal Co., P. O. Box 1536, Heber, CA 92249, (619) 353-8200.

P. MICHAEL WRIGHT APPOINTED NEW GEOTHERMAL COMMITTEE CHAIRMAN

EMD is fortunate that Dr. Wright, Director of the Earth Science Laboratory at the University of Utah Research Institute, will chair the EMD's Geothermal Committee. Dr. Wright provided an excellent overview on geothermal developments to EMD's Symposium on Forecast and Outlook for Energy Minerals, 1988-1998, held during the last annual meeting. He has been with the Laboratory at UURI for 11 years. It has an applied focus, developing new exploration techniques and mapping and assessing geothermal systems. Prior to this, Dr. Wright worked for 11 years with Kennecott Copper, the last 7 as Chief Exploration Geophysicist. He holds degrees in Geological Engineering (BA) and Geophysics (Ph.D) from the University of Utah.

On taking on his new role, Dr. Wright prepared the following thoughts for the geothermal community within AAPG: *"I'm looking forward to keeping members abreast of geothermal*

developments. One of my first priorities is to help coordinate an exciting program at the annual meeting in San Francisco (1990). Additionally, geothermal operates in an environment of dynamic changes in technology as well as economics, and we should be prepared to take advantage of opportunities in geothermal energy that will continue to come up. One of the most immediate and unsuspected is the attention given to global warming issues over the past year and the implication for those energy sources which produce less CO₂ to get a harder look.

I'm currently forming a core committee of individuals who would like to contribute to EMD's geothermal plans and invite any individuals who are interested to contact me. I feel EMD has a unique and important role to play and at the same time we will work closely with many other groups."

You can reach Dr. Wright at the Earth Science Laboratory, University of Utah Research Institute, Research Park, 391 Chipeta Way, Suite A, Salt Lake City, Utah 84108, (801) 524-3423. Dr. Wright has just joined the AAPG (in case you have difficulty finding his address) and brings needed skills and energy to EMD's geothermal activities. Bill Berge, our former Geothermal Chairman, provided EMD many years of service, yet his own career took a turn away from geothermal making it difficult for him to maintain an active perspective. Still, he will continue to help the EMD and support Dr. Wright's new efforts.

NOMINATIONS SOUGHT

Frank Kottowski, Chairman of the Nominations Committee, asks you to submit names to the Committee of individuals whom you would like to see nominated for the upcoming election of officers and councillors. You need not exclude yourself if you are interested. Frank's address: New Mexico Bureau of Mines and Mineral Resources, Socorro, NM 87801, (505) 835-5420.

EMD SYMPOSIUM ON "COMPETITIVE URANIUM SOURCES AND OUTLOOK"

EMD is organizing a special symposium on uranium for the 1989 Rocky Mountain Section Meeting on October 1-4 in Albuquerque. No, we do not presume that the "u" word is back in vogue; but the time and place are

right for taking a serious look at the lower cost uranium deposits that can compete in today's marketplace. Consequently, in a special session organized by Virginia McLemore (NM Bu. Mines and Mineral Resources, Socorro) and Bill Chenoweth (Grand Junction), various authors will address U.S. and Canadian market developments and exploration, Arizona breccia pipes, solution mining deposits, the Mt. Taylor mine and the Athabasca deposits and potential. Among questions that come to mind: with the prospects of more open trade with Canada, how attractive is the option to explore and develop uranium properties in Canada? And how attractive are the opportunities this side of the border?

At the same meeting, Moharnmad Hassan Alief will provide attendees a rare opportunity to take an underground tour of Chevron's **Mt. Taylor Mine**. Space is limited, so interested people will have to act fast once the announcement goes out to assure a spot. Considering both the unique technical program and the field trip, this meeting should be well worth it for any individuals active in uranium.

But what if you are not active in uranium, you ask? The general program will be balanced as usual, and the field trip will spend only 1/2 day at Mt. Taylor. The afternoon will include a visit to the Lee Ranch coal mine. Another 2-for-1 bargain!

Key persons involved in organizing the EMD programs include Chris Rautman, EMD General Chairman (505-846-4922) and Virginia McLemore, Technical Program Chair who, we understand, is also making the arrangements for the field trip and preparing the road log (505-835-5521). Gretchen Roybal (also Socorro) is handling the coal programs for the meeting and field trip. **IT IS NOT TOO LATE TO SUBMIT ABSTRACTS -- MARCH 1 DEADLINE.** Coal, uranium and other EMD topics are all solicited.

AN EDUCATION IN LIGNITE, NORTH DAKOTA STYLE

The August Rocky Mountain Section Meeting featured a field trip to North American Coal Company's Coteau Properties' Freedom lignite mine. Formally cancelled due to insufficient response, EMD's Technical Program Chairman Terry Rowland, Senior Geologist with North American Coal Co., took a small group out

on his own to see the operation. Production is about 11.4 million tons of lignite per year, placing this mine in or among the 10 largest in the U.S. The lignite averages 6800 Btu per pound and has a variable sodium content. 2/3's of the output is sent to the adjacent Northern Great Plains Coal Gasification Plant, 1/3 to Basin Electric's Antelope Valley powerplant. Not far from Beulah, this region in North Dakota is truly an "energy basket", with much of the power generated here destined for markets in Minnesota.

Mr. Rowland's tour underscored the unusual geology of the North Dakota lignite mines. The main seam in the Freedom Mine is the 20' Beulah Zap seam. One might expect the coal quality in such a seam to be quite uniform, but this is not the case with sodium. To maintain an acceptable product requires close coordination of the mining plan with the information and interpretation of coal quality by the geological staff. Glacial geology plays a particularly important role, controlling not just the overburden thickness but also implicated for controlling the groundwater regimes that are now suspected to influence sodium levels.

The EMD Luncheon Speaker was Dr. Gerry Angevine, Executive Director of the Canadian Energy Research Institute, who spoke on "Perspectives on **Canada-U.S.** Energy Trade". With removal of most of the trade barriers as delineated in the FTA (Free Trade Act), Dr. Angevine indicated that gas exports to the U.S. would probably rise, nearly doubling to 1.8 TCF per year over the next ten years. Coal - noting that Canada already imports more coal from the U.S. than it exports - would be relatively unaffected, as the coal trade has been tariff exempt. Oil would receive a modest boost, but this outlook is really contingent on further development of heavy oil and bitumen which, Dr. Angevine pointed out, account for over half of Canada's crude oil exports. The biggest impact on oil would occur if the U.S. were to enact import fees, from which the FTA specifies that Canada would be exempted.

Uranium has been embroiled in legislation on both sides of the border. The FTA would enhance export prospects, and thus permit expansion of the Canadian industry which is dependent on export growth to support further development. Electricity exports, too, face substantial growth; yet rather than grounds for alarm (concerns have been raised both in the U.S. and in Canada),

Dr. Angevine pointed out that analysis supports a more favorable view, as mutual benefits will accrue from this trade. In all, Dr. Angevine. concluded that the FTA, if enacted, would not bring about immediate changes -- but rather would pave the way for gradual growth of confidence of both U.S. markets and of investors in Canadian energy development.

Coal	0.1
Uranium	0.6
Electricity	1.0

To obtain copies of Dr. Angevine's remarks, write Jeremy Platt.

To help place the Canada-U.S. energy trade in perspective, Dr. Angevine prepared the following table:

The EMD technical session included papers on lignite quality, underground coal gasification, tar sands and regional aspects of Canadian and U.S. Western coal. The EMD **Best Paper** Award was won by Brian A. Rottenfusser for his paper, co-authored with N. K. Alwast and J. E. Palfreyman, on "The AOSTRA Underground Test Facility -- Concept and Geological Setting". EMD owes thanks to our Canadian Councillor Brian Hitchon for finding authors on this topic and on Alberta coal.

Canadian Energy and Electricity Exports to the U.S. (Billion 1986 \$)

Crude Oil	3.7
Natural Gas	2.4

MORE RESULTS FROM THE EMD QUESTIONNAIRE

First, a reminder of results reported in the last newsletter: "Among EMD's traditional programs, where would you assign the highest priorities over the next 2 or 3 years?"

coal	238	geothermal	97
oil shale	74	remote sensing	46
geothermal	67	nuclear minerals	106

Second, greater detail on the spectrum of possible activities: "Considering the broad range of activities the EMD might undertake -- some standard and some new -- which do you feel are most appropriate now or would be most useful to you?"

	basic research	applica- tions	field trips	moni- toring	contin- uing ed.	public educ.	business decisions	public policy
coal	133	150	79	42	72	101	77	140
oil shale	129	72	29	48	37	50	43	70
tar sands	129	87	38	40	39	40	40	49
geothermal	134	126	42	43	63	65	43	68
remote sensing	126	190	26	32	105	43	33	39
nuclear minerals	91	76	47	66	62	139	65	141

Third, attitudes about possible problem areas: "What is your attitude about information from AAPG and/or similar societies on geoscience and related topics of professional interest to you?"

	agree strongly				disagree strongly			
"There is simply too much information."	16	23	64	82	59	55	84	
"The information I care about is scattered in too many places."	39	63	73	88	55	47	16	
"There are too many meetings."	27	35	52	115	62	59	29	

	agree	strongly	. . .	disagree	strongly		
"Only a fraction of the papers or sessions I attend are directly relevant to my work."	63	94	77	65	36	32	14
The management perspective from different companies toward scientific and business issues is too important to overlook."	105	96	70	62	15	10	5
Time and travel are a big problem".	91	107	69	59	26	18	5
"A much more integrated approach across scientific disciplines needs to be recognized."	99	81	93	71	22	10	5
"Computer applications need a lot more attention."	64	67	91	94	34	23	9
"Too often the computer papers are so technical they could only appeal to computer fanatics."	93	93	69	65	27	20	8
"Too often the geologic papers are so technical they could only appeal to research geologists."	50	76	81	62	41	55	19
"The political and regulatory dimensions should receive more treatment."	63	72	92	83	32	26	13
"Developments in the energy markets should be routinely reviewed and interpreted."	118	107	74	65	10	6	2
There's almost zero follow-up after meetings summarizing sessions, discussions and field trips for those who couldn't attend."	88	89	84	88	15	7	4
The system we've got is fine the way it is."	5	31	57	101	87	61	34

Fourth, a look at possible solutions: "To the extent that geoscientists are confronted with both an information overload and a proliferation of meetings, how do you react to the following suggestions.?"

	check if you support the suggestion	check if you might spend some time on this	both	total
A. Reduce frequency and improve agenda of EMD meetings.	215	45	24	284
B. Arrange symposia around selected topics, with more invited speakers and more time for each.	244	27	32	303
C. Allow sufficient time for symposia, approx. 1 to 3 days, so that a comprehensive body of information can be addressed.	227	31	20	278
D. Establish EMD liaison person(s) with other societies to promote coordinated planning for symposia and publications of mutual interest.	249	14	33	296
E. Provide adequate discussion time for panels of speakers and opportunities for non-scheduled presentations with respect to symposium themes.	180	24	11	215
F. Continue to schedule traditional, unstructured EMD sessions as outlet for miscellaneous EMD papers and talks.	161	31	8	200
G. Encourage "literate and informed" reviewers of EMD sessions and field trips to prepare informal summaries and interpretations of the events.	233	14	21	268
H. Ditto for relevant non-EMD technical meetings, conferences and industry events.	192	18	22	232
I. Develop a collection of "open file" EMD documents and commentaries to be distributed to members on request and at cost.	240	10	21	271
J. Develop and maintain multi-society calendar of events and meeting agendas across the spectrum of EMD interests.	235	12	15	262

Fifth, greater detail on one of the coal questions: "Studies in coal geoscience techniques and applications could be sought across a broad range of topics. Which ones would be of greatest interest to you? Would you like to see short courses or special programs developed for any of the topics? (circle choices)"

your interest.....			circled
	strong	moder.	little/no	choices
a. regional reconnaissance .	99	103	40	16
b. mine investment evaluation .	55	96	76	9
c. mine design/planning .	52	67	100	6
d. mine cost estimation .	49	82	91	5
e. mine cost management .	33	83	98	4
f. health and safety	34	65	113	6
g. coal cleaning .	59	85	80	11
h. coal quality estimation .	105	79	49	28
i. geol. controls on quality/occurrence	170	57	29	51
j. coal specifications and contract terms .	30	84	99	5
k. transportation and handling .	20	66	125	5
l. combustion characteristics .	50	82	82	13
m. powerplant performance	45	68	110	8
n. recoverable reserves estimation	133	78	35	32
o. regional production capability .	78	101	51	15
p. mine productivity/cost trends .	59	97	70	9
q. resource appraisal .	137	81	27	9
r. litigation/contract disputes .	21	57	133	0
s. other .	39	1	11	5

'Could you identify candidate case studies or contribute in any way to this effort?'
 yes: 29 maybe: 83

Finally, greater detail on a question about compiling interdisciplinary geoscience case studies, asking: "Which topics do you think could and might be suitably be addressed by EMD? (Circle choices where you or your organization could make some contribution.)"

	any interest	circled choices
municipal groundwater questions	156	30
coal recoverability and costs	121	23
gas supply outlook	129	21
land use planning	162	16
state resource management	133	14
environmental impact reports	146	31
resource company asset valuation	133	12
radioactive waste management	162	16
other .	37	6

**DOUG PETERS REPORTS ASTOUNDING
 PROGRESS ON EMD COAL VOLUME**

The EMD volume on "Geology in Coal Resource Utilization" is getting off to a promising start. Less than one week after the due date for submitting synopses, Doug Peters, the Editor, writes the following progress report. Some of you will be glad to know that the door has not been slammed shut for new submittals, but the Editor is now able to be increasingly picky. It is some weeks or months, yet, before he will pass

through this stage and become truly cantankerous.

EMD's intent is to compile a useful and interesting volume directed toward industry concerns. For the few possible remaining authors out there -- especially mining company people -- who feel they are too busy mining, poring over maps, or driving around in pickup trucks to prepare a story -- STOP! This is your chance. *Contributions like yours are what will set this volume apart.*

Authors should not shy away from addressing key issues in overcoming obstacles to coal geoscience applications, not just the technical or scientific dimensions. And the messy path of actual progress should be portrayed - after all, much can be learned from mistakes.

Doug's report:

"Thus far, 30 synopses of papers for the EMD applied coal geology volume have been accepted for production for full papers. Some of these will require a bit of reorientation or focusing to be of greatest use to industry. Nonetheless, the response to the Call for Papers was most gratifying. It is still possible to submit a synopsis/full paper for the volume if you missed the first deadline. New submissions should be sent as soon as possible, none later than February 27. Such new submissions may have a tighter full paper deadline than those that made it in by Dec. 9. I also will be inviting some papers to fill in holes and to provide overview papers for each chapter in the volume.

"Areas in the volume that are still somewhat weak are coal gasification, reserve estimation, coal quality concerns, and environmental impact. *If you have a potential paper to submit, or if you have any questions about the volume, please give me a call or send me a synopsis and I will be happy to discuss it with you.*

"Reviewers also are needed for the technical review stage of the full papers. If you would like to volunteer, let me know and I will work out an arrangement with you on topic area (s) and number of papers to be reviewed.

"Based on the papers submitted so far, I expect the volume to be a significant resource to the coal industry. Questions, comments, and suggestions from the members are always welcome."

Doug Peters
U.S. Bureau of Mines
P.O. Box 25086, Bldg.20
Federal Center
Denver, CO 80225
(303) 236-0772

...Scorecard as of 12/14/88:

Exploration and Reserve Definition (5 synopses)
Coal-Bed Methane (6 synopses)
Coal Gasification (2 synopses)
Reserve Estimation (3 synopses)

Mining (5 synopses)
Coal Quality Concerns (6 synopses)
Environmental Impacts (4 synopses).

EMD PROGRAM AT EASTERN SECTION MEETING IN CHARLESTON, WV., A MAJOR SUCCESS

First, a comment from one of the attendees, Charles VanNess, Staff Geologist with Pennsylvania Power & Light Co. of Allentown:

"Congratulations on a job well done. The Low Sulfur Coal Supply Symposium presented a number of papers of value... The availability of low sulfur coal, future utility fuel procurement policy and the projected market prices suggested by the various authors gave rise to a number of lively discussions... In addition, ...several of the papers and poster sessions relating coal quality to depositional environment presented fresh ideas to the explorationist or coal purchaser. My thanks to Carl J. Smith and Scotty McColloch of the West Virginia Geological and Economic Survey for their organization of this meeting."

We asked the WVGS to provide a synopsis for our newsletter. Tom Repine and Jane McColloch kindly provided the following:

"The extensive EMD Program resulted in one of the best EMD/AAPG Section meetings ever held. More than forty EMD members participated. The EMD program included 13 oral presentations, 9 poster sessions, 2 field trips, free video theater, and an EMD luncheon. Many commented on the practical application and implication of the sessions they attended.

"The oral program was organized by an EMD committee chaired by Scott McColloch. A General Coal Session addressed such diverse topics as marine zone occurrences in West Virginia [recognized for providing valuable help in correlation of the complex coal-bearing sequences], studies of depositional environments of Eastern Kentucky, and an examination of the freshwater limestones in western Pennsylvania. A significant and welcome change in audience composition was noted for two papers on coalbed methane as numerous "oil & gas" registrants visited the EMD session.

"Papers in the Low Sulfur Coal Symposium addressed current attempts by many coal geologists and concerned organizations to more accurately depict coal reserve estimates, taking into account

coal quality and, in one paper, the practical effect of production costs.

"The EMD Best Paper was awarded to William C. Grady for his paper on "Characteristics and Utilization of Kanawha Formation Splint Coals in Central and Southern West Virginia", co-authored by C. F. Eble and K. C. Ashton. [These Upper Kanawha seams have extraordinary economic importance as they will play a central role in meeting very low-sulfur coal needs, <1.2 lbs SO₂ per million Btu or <0.7% S. Understanding their quality requires using the new "raised bog" depositional models initially advanced by Blaine Cecil of the USGS.]

"The EMD Poster Session, chaired by Ken Ashton, assembled in one location a vast array of work being done by geologists in West Virginia, Kentucky and Pennsylvania. In addition to impressive displays, the opportunity to talk with the authors at length on a series of related coal topics was most useful. The Best EMD Poster was also singled out as the Best Poster for the entire Eastern Section Meeting. The award will go to Steve Greb for his poster on "Geologic Models for Coal Mine Roof Failures in Kentucky", co-authored with J. C. Cobb.

"Two field trips were held. In the first, Mitch Blake, Alan Keiser, Ron Martino and Nick Fedorko showed participants the complex nature of the Pennsylvanian Charleston Sandstone and Kanawha Formation along a newly-completed portion of highway south of Charleston [which offers truly world-class outcrops. Ron Martino added a fresh perspective to this trip with his special and practical knowledge of the marine sequences.] A stop at Ashland Coal's Hobet #21 surface mine gave participants a close-up look at one of the largest dragline operations in Central Appalachia and at the related Upper Kanawha sequences.

"The second trip, held after the convention, was a whitewater raft trip on the geology and mining history of the New River Gorge area. [Once a pre-eminent coal and coke producing area, the ruins of villages and coking facilities provided tangible meaning to the concept "coal depletion".]

"At the well-attended EMD Luncheon Jeremy Platt, EMD President, presented the keynote address, "Low Sulfur Coal Supply: A National Concern". His paper pointed out that the coalfields near Charleston and extending into Eastern Kentucky are poorly understood national assets that will significantly impact a number of public and industry decisions

about coal markets, needed technologies, and environmental issues.

"The West Virginia Geological Survey issued a special and informative compilation of reprints for this meeting, titled 'Mountain State Coal'.

"Overall, the interaction of geologic ideas and knowledge among EMD participants resulted in a very satisfying and enjoyable meeting. The 1988 Eastern Section Meeting Technical Chairman Carl Smith [also EMD's Eastern Section Councillor] and the General Chairman Ed Rothman, along with all the other EMD committee members, are to be commended for all of their work."

About 10 of the papers from the Symposium and General Coal Session, plus a handful of invited papers, are being prepared for publication in a special volume by the Coal Decisions Forum, as a cooperative project with EMD. This volume is tentatively titled "One Point Two - New Geologic Perspectives on Central Appalachian Low Sulfur Coal Supply", edited by Stan Suboleski, Marshall Miller and J. Platt.

LIQUID FUELS WORRIES -- A LETTER FROM DON TOWSE

EMD Vice President Don Towse submits for your consideration the following thoughts. He would like to start a dialogue with you on a subject that is somewhat controversial and bound to fire some of you up. Keep the letters coming!

"Could the United States find the equivalent of up to 15 billion barrels of conventional crude oil, and another 4 billion per year to replace imports and avoid a painful shortage of liquid motor fuels? AAPG members can provide many of the answers.

"The Energy Minerals Division is an appropriate source for the AAPG contribution, and I will be arranging organizational meetings at the Annual meeting in San Antonio and at the Pacific Section meeting in Palm Springs. To Members who wish to contribute: please contact me with your suggestions and plan to meet with us in San Antonio or Palm Springs.

"No informed person doubts that a shortage of crisis proportions could develop in conventional liquid fuels, on which the U.S. transportation system, our social and economic lifeblood and the engine for our national defense, depends.

The timing of the crisis is the only other question.

'The potential effects on national and world security are unacceptable.

'The American solution has to match the problem. Small increments in production and efficiency will not do the job: under present conditions, replacement of oil imports would require an addition of the equivalent of 15 billion barrels to domestic reserves and annual increments of about 4 billion barrels.

How has national energy policy addressed the present and future crisis in liquid fuels? If the policy needs correction, how can AAPG members help?

"Department of Energy expenditures for fossil energy research and development in the 1987-88 fiscal year were allocated reasonably well relative to the potential resource, 85 percent for coal, and 11 percent for oil, including shale oil. Liquid (transportation) fuels research, however, was seriously under-funded, 19 percent for liquid fuels research, including coal liquefaction, enhanced oil recovery, and oil shale. Forty-one percent, on the other hand was directed to power generation, including exotic areas such as magnetohydro-dynamics.

"National planning for energy exploration, research, and development should be based on the needs and available resources and directed toward potential solutions that will produce new supplies in the quantities needed to avert a liquid fuel crisis.

"Continued effort and resources misdirected to scattered targets and inappropriate goals will result in failure.

"Heavy oil and tar sands, coal, methanol from a variety of sources, liquefied gas, improved recovery of conventional oil, and improved combustion are among the possible solutions. The EMD contribution can consist of a rational foundation for planning a campaign directed at attainable targets large enough to make a difference. This should include resource estimates, demand analyses to provide guidance on the timing and dimensions of future needs, and an evaluation of recovery and utilization technologies." *Don Towse, San Jose, California.*

COMMENTS ON URANIUM MARKET DEVELOPMENTS

The following comments were submitted to this newsletter by Dr. Louise Julian, an economist with TVA's Nuclear Fuel Supply Branch. An expert on uranium matters, she also serves as a Corresponding Advisor to EPRI's Fuel and Operations Planning Program. She has volunteered a paper for EMD's Symposium on Competitive Uranium Sources and Outlook in Albuquerque.

A brief overview of recent developments in the uranium and nuclear industries should be of interest at least 106 of you, based on responses to the EMD Questionnaire results published in the last newsletter.

Certainly all market participants in uranium supply and demand, as well as in nuclear fuel cycle services, have long realized that markets are international in scope. This international aspect is becoming more significant than ever. Not only are there competitive uranium supplies available from the United States, Canada, Australia, Africa, and other traditional sources, but also the non-WOCA countries (World Outside Centrally-Planned Economies) are becoming more of a factor. The ban on imports from South Africa and Namibia is expanding with the statement by the Japanese indicating that no new contracts will be signed with these sources. Market participants should follow developments with respect to expected Namibian independence from South Africa. Reports indicate that independence would result in dropping U.S. sanctions against Namibian-origin uranium. Rossing, Namibia's only uranium mine, produces in excess of nine million pounds of U_3O_8 per year. An interesting development in non-WOCA participation is the entry into the market of Chinese producers who already have signed a few term contracts. It will be interesting to see whether additional contracts are signed in 1989. Several U.S. producers signed term contracts with Japanese utilities in 1988. However, with uranium spot prices at approximately \$12.00 per pound, apparently not too many people had uranium on their holiday shopping lists for near-term delivery.

Some good news for the nuclear industry is that U.S. voters still haven't passed a referendum to shut down an operating nuclear plant. Their latest opportunities were in Sacramento and

Massachusetts. Nebraskans rejected a measure that would have required the state to withdraw from their regional compact with four other states for the disposal of low-level nuclear waste. There is apparent progress in the area of high-level nuclear waste disposal, with the selection of Nevada's Yucca Mountain site for characterization as the first U.S. deep geologic repository.

In Canada, Prime Minister Brian Mulroney's Progressive Conservative Party gained the majority needed to retain control of the Parliament in the November 21, 1988 election. The Liberal and New Democratic Parties had said they would reject the U.S.-Canada Free Trade Agreement (FTA). Implementing legislation for the FTA has been passed in both countries. Under the agreement, Canadian-origin uranium would be given the same status as U.S.-origin uranium. Canada would drop its requirement for domestic conversion of yellowcake to UF₆ prior to export.

Many industry observers expect passage of the FTA to result in U.S. miners discontinuing their efforts to obtain some protection against the competition of lower-cost uranium imports for use in U.S. reactors, because Canada would theoretically be exempt from any potential enrichment restrictions on foreign-origin uranium under Section 161 (v) of the U.S. Atomic Energy Act. Canadian uranium ore, especially from the Athabasca Basin of Saskatchewan, is particularly high-grade, and Canada has been the major source of uranium imports for the United States. In the U.S. uranium miners versus DOE litigation, on December 9 lawyers for the miners and DOE met before U.S. District Judge Jim Carrigan for the purpose of setting a trial date: The miners asked for a 90-day extension to file an amended complaint against DOE based on the extended time period since the suit was first brought (four years). DOE will then have up to 60 days to respond to the amended complaint. The future of this litigation and any new legislative efforts on behalf of the U.S. uranium miners is uncertain at this time. Developments in this area will be important to monitor for those concerned with the market outlook for competitive sources of uranium.

Australian producers are concerned about U.S. import policies. Imports from Australia into the United States are less than from Canada; however, the potential for relatively low-cost yellowcake

from known reserves is high. If import restrictions were put in place in the United States, Australia and other suppliers could be impacted even though Canadian suppliers were not, under the FTA. Australia continues to maintain its "three mine policy" and contact floor price concept, but the future of these policies is uncertain. The first shipment of uranium was made from Olympic Dam (now the third mine) in November 1988.

A number of events have occurred in the uranium and nuclear industries over the recent past. The long-term market consequences are unknown. Only a few of these have been mentioned here. I look forward to the Albuquerque meeting as a technical forum for discussion among geologists, economists, and mining engineers on issues in which we all have a stake.

**!!!!FLASH!!!! MIDCONTINENT SECTION
TO OFFER AN EMD SESSION**

Sam Friedman, EMD Conventions Committee Chairman and author in charge of EMD's annual coal developments paper, is organizing an EMD Session for the Midcontinent Section Meeting, September 24-26 in Oklahoma City. Call for Papers: With emphasis on coalbed methane and coal likely, he invites authors on any EMD topics to send a copy of their abstract to him by Feb. 15 (OK.G.S., Rm. 163, 830 Van Vleet Oval, Norman, OK 73019), in addition to sending the standard one to the AAPG Convention Department in Tulsa.

**FROM THE LITTLE-KNOWN FACTS
DEPARTMENT:**

Did you know that the delivered value of U.S. coal production exceeds \$32 billion per year, not distant from that of U.S. oil production, approx. \$45 billion? And that the energy content in domestically produced coal actually exceeds that of domestically produced oil? Coal has been a big-ticket item in the energy picture for a long time. Figures such as these argue we should have no qualms about raising its status in our scientific consciousness.

EMD Newsletter prepared by Jeremy Platt, with thanks to all contributors and apologies for any errors.
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